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ABSTRACT

In this paper, five doctoral students at California Institute of Integral Studies (CIIS), calling themselves the New Technology Group (NTG), describe their research on online communication as a method of inquiry. The focus of the inquiry is to contribute to the formal knowledge base of adult online learning, the impact and possible benefits of more advanced computer-based technologies through student-mentored technology enhancements. The NTG is studying how various modes of online communications (synchronous and asynchronous, videoconferencing, and chat groups) impact experience, styles of communication, and need for skills as students in the online medium. Highlights of this paper include: collaboration; student mentors; action-reflection cycles; obtaining instructor feedback; systems application; quotes from NTG members describing their experiences; technical angst; application to online learning; and videoconferencing equipment. (AEF)

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ED 419 505

Paper Session

Students as Mentors of Technology

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Introduction: Videoconferencing—Collaboration in Failure

We are a group of five self-selected online doctoral students at the California Institute of Integral Studies (CIIS) who've embraced videoconferencing as a method of inquiry. We call ourselves the New Technology Group (NTG). As of this writing we are in the third quarter of working as a collaborative action inquiry group. Our mutually negotiated goal, the focus of our inquiry, is to contribute to the formal knowledge base of adult online learning, the impact and possible benefits of more advanced computer-based technologies through student-mentored technology enhancements.

The NTG is studying how various modes of online communication (synchronous and asynchronous, videoconferencing, and chat groups) impact our experience, styles of communication, and need for skills as students in the online medium. We've expanded the study to include phenomenological interviews with graduate students using the online mode of education from other institutions. We are hoping to include an inquiry into aspects of mentoring in an online environment. We are examining this from a systems perspective, based primarily on the work of Wheatley and Kellner-Rogers in "A Simpler Way."

Student Mentors

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Students involved in the inquiry live respectively in Northern and Southern California, Virginia, New York, and Washington. Acting as technology mentors and scholars, we charted our progress as well as planned our next steps through a series of preset action-reflection cycles. These preset cycles allowed for continuous academic assessment of our efforts. Instructors were able, at any time to check on compliance with program standards. From the outset of the inquiry, both enthusiasm and responsibility were guaranteed from each member of the team as a result of the collaborative goal-setting and implementation of the team-chosen research design and structure.

Action-Reflection Cycles

The action-reflection cycles allowed us to convene at preset times to check in with each other, reporting our progress as well as our set-backs. The action-reflection cycles served to keep us on task as well as keeping all members of the team in constant communication. As we evaluated our progress, we were then able to agree and define what activities were necessary for the next action cycle. Most often, the joy of discovery, even discovering what was not working, was prevalent and served as the guide to form our next steps. Thus the beginning of embracing failure. As activities were carried out, the study group attempted to convene in videoconferences, but not all members were able to participate each time. However, each member of the NTG reflected on the experience. Detailed notes on the attempts, the success/failure, and the steps taken to ensure future success were circulated.

Obtaining Instructor Feedback

We carried our research cycles out in a "fish bowl" conference online. The CIIS uses the Meta Network system for online classrooms. Unlike e-mail-based classes, anyone with a password can "check in" to items and read the postings. At any time the instructor could view the inquiry as it was progressing, choosing to interact, ask questions, or add suggestions. Other students who were not part of this inquiry team were also allowed access to observe our process as well as to ask questions or add suggestions. As we continue in this environment, we see the possibility and hope to implement a mentoring component as part of our inquiry. As new cohorts are started at CIIS, students will develop and support newer students in the methods and process of implementing new technology within the online environment.

Systems Application

In the opening to "A Simpler Way," Wheatley and Kellner-Rogers begin with "an invitation" in which they outline the basic tenets of their thinking about systems:

- "The universe is a living, creative, experimenting experience of discovering

- what's possible at all levels of scale, from microbe to cosmos."
- "Life organizes around a self. Organizing is always an act of creating an identity."
- "Organizations are living systems. They too are intelligent, creative, adaptive, self-organizing, meaning-seeking."

These are the traits that inform our idea of NTG as an emergent system that is self-organizing. In our study, we watch ourselves in the process of discovering new skills and ways of communicating to see what develops and what systems emerge.

The concepts of emergence and self-organization are very evident in NTG. As we've struggled with the technology, leadership shifts, new or modified ideas emerge, and the group organizes fluidly in response. The dynamic is both internal (influenced by systemic dynamics, feedback, dynamic equilibrium, communication) and external (contextual, as relating to the environment and larger system most evident with the technology).

"Life Self-Organizes"

We are experiencing new dynamics as we explore different methods of connection. Chat technology changes the speed and energy of decision making online. Seeing a person's face on your screen causes a very visceral reaction and response. Here are some quotes from NTG members describing their experiences:

- "Also it felt like our 20-minute conversation was more productive than several weeks worth of online asynchronous decision making."
- "I felt an incredible surge of energy today when we chatted. After a year of asynchronous, or unintentionally synchronous, online communication, the fact that four of us were, at the same time, connected together for the purpose of talking was an amazing alignment for me. To me, the shared intention was tangible. It felt that our energy actually began to flow and move in a direction. It felt less chaotic, to a certain degree. And boy, was it easier to make decisions!"
- "When we are chatting it is a more personal experience, and I am more effortlessly willing to take on whatever tasks are necessary. Whereas online, I wait until others have seen postings and have a chance to respond or pick up the ball and make a decision before I move on anything. The online asynchronous mode really allows for a certain impersonalness and lack of responsibility."
- "Finding a rhythm in the chat room does take a bit of time. What I finally wound up doing was typing a response and then waiting to see if anyone else said something first so that I wouldn't splinter the conversation yet again."
- "The frustration of missing what you know to be going on is incredible as is the panic to get on as fast as possible. Once the real-time chats are done, they're done. Obviously this isn't like the asynchronous world in which you can do things in your own time. All of a sudden we're dealing with real time, and it seems speeded up somehow...."
- "I would never ramble on like this in a chat. The style there is succinct and to the point, without much explanation. Then if someone asks a question, you

can clarify. I find that in asynch, I tend to try and foresee the questions and address them in the original posting."

- "Cognitively: you cannot post long items, no 'cut and paste' (you can only save a small portion of the transcript at a time), the long thinking that comes from integration and weaving doesn't seem suitable for chat. Behaviorally: you have to rearrange your schedule, it is like being back in class. For me I have given this up, so it is hard to start again. Affectively: it is really, really fun!"
- "I concur that typing speed counts. In tonight's videoconference, it took quite a bit of time to get a rhythm for posting and maintaining the flow of the conversation. I will be glad when I figure out audio."

Technical Angst—Failure 101

Some or all members of the group experience technical difficulties at different times while working with the new videoconferencing technology. The complexity of fitting the various pieces of software, hardware, netware, and telephone technology in ways that match is outside the control of any one member of the group. It is a true collaboration.

We've discovered many ways that videoconferencing doesn't work. We are learning from each one of these failures. To succeed, no doubt we will fail many more times. We have related this to the paradox of "failing to learn" and have placed our faith in Wheatley's assertion that, "Life uses messes to get to well-ordered solutions. Life doesn't seem to share our desires for efficiency or neatness. It uses redundancy, fuzziness, dense webs of relationships, and unending trials and errors to find what works" (p. 13). As we continue to spread the breadth of the community by welcoming new participants to the project, we will continue to emerge in our focus and goals, to include and reflect the experiences of those joining.

Application to Online Learning

In seeking to expand this work into the larger systems in which the NTG is embedded, we look again to Wheatley's concepts of systems and how they develop. In describing the development of community-organizing efforts she writes, "People work on a small effort and discover new skills. Their energy and belief in themselves grow; they take on another project, then another. Looking back, they see that they have created a larger system whose capacities were undreamed of when they first began" (p. 70).

Videoconferencing Equipment

Desktop videoconferencing was accomplished using both PCs and Macintosh computers, transmitting over POTS (plain old telephone lines). The purpose was to test the limits of what low-end desktop units could offer in a doctoral program. Each

participant selected a camera, given hardware and financial resources. Selections ranged from the high-end U.S. Robotics focusable camera to the stand-alone Connectix desktop unit.

The Global Schoolhouse was used as the reflector site for videoconferencing. IP address 199.106.67.100. During the first six months of this study, the Global Schoolhouse experienced a reflector fire. This produced one of many set backs. White Pine Software has continued to upgrade and update the CU-SeeMe software. Updates to the Macintosh version to 3.1 were another factor in impeding a full connection with all conference members.

At the conclusion of the initial study period, all participants agreed that the arrangement was at least satisfactory. Because videoconferencing is expected to remain an adjunct to the asynchronous learning environment, this hardware set up is satisfactory.

Collaboration In Failure

In assessing our work in videoconferencing as a tool for education and mentoring, we've been forced to realize the prevalence of failure. We've been confronted with the need to accept a few realities:

1. The technology is unreliable.
2. No matter how intelligent we are, many of the dynamics and situations we face are out of our control.
3. Once an asynchronous pattern of interaction in an online classroom is established it is difficult to re-engage in a synchronous mode.
4. Even with fully operational equipment, the variances in Internet traffic may impede a conference from being completed.

Because of these realities, we've determined that failure is "grist for the mill" in working with videoconferencing projects in education. We are defining failure as not meeting clear, measurable outcomes in successfully implementing and connecting using videoconferencing on the Web. However, we are not defining the project as a failure. We've enjoyed great success in our failure!

Let's examine the two realities of videoconferencing we've confronted:

First, that the technology is unreliable. In spite of (or maybe because of) the Intel/Microsoft dominance of personal computing, the technology is no where near the level of reliability of television or other older technologies. Personal computing is still an intimidating, confusing adventure for most adults.

For children growing up with computers, it is less of a challenge. Yet, it is still common for software and hardware to fail for unknown reasons, for crashes to occur in the midst of crucial work, for programs to fail to load properly even though one is following the directions perfectly. In other words, there is still a sense of adventure and uneasiness when stepping into the computing arena. The outcome is not assured.

In addition, there is a whole new, arcane language to master to navigate in the computing arena. Some of the language has become part of the lexicon, even though the exact meanings of some of the usage is unclear. "Boot up," "packet," "codex," "grayscale," "frame-rate," "IP address," and more are part of the everyday language of the "nerd." Those of us less technically "hip" may have difficulty understanding the technical meaning of these phrases.

The second issue is somewhat related. That is the issue of dynamics that are out of our control. Even though the technology, at the personal level, is unreliable the bigger picture is even more out of control. The bandwidth problem of access to the Internet means that those trying to use equipment that funnels through personal modems are at the mercy of Internet traffic. With dial-up ISPs able to give service at speeds limited to the modem capabilities, many times the bandwidth required for videoconferencing is just not available.

So, many times our group was able to connect or meet at a reflector site, only to lose a member or two to fluctuations in the bandwidth. The issue of compatibility played itself out here, also. Macintosh computer users have different software and hardware standards than PC users, who have different choices for software and hardware. These standards are not compatible. We had no way of knowing, until we tried, if we could connect to a site that gave us the ability to conference. We had no way of knowing which sites allowed which standards until we tried them. Successful connections become more of a hope than a probability.

Given these realities, it is hard to plan for outcomes that can be readily assessed. Enthusiastic failure is the only sure outcome. Therefore, we concentrated very much on the skill-building aspects of collaboration. Using the foundation of emerging living systems as proposed by Wheatley, we embraced the "messy" nature of the technology and concentrated on being aware of different styles and methods of leadership; different styles and methods of collaboration; different styles and methods of team-building; and different styles and methods of reflecting back to the system the individual needs and learning.

Conclusion

Collaboration in failure became the rallying cry for our research group. Because no one could predict how or when the technology would fail (only that it would—often), it was a surprise and a delight when we were able to connect.

Future Implications

In designing and mentoring videoconferencing projects in education, failure must be part of the planning and learning. How do we deal with failure? How do we maintain teamwork when one or more of us is unable to master the technology? How do we function as a group when the dynamics make it easy to fail?

Our ongoing work together is focused more and more on this dynamic of

collaboration and failure than it is on the technology. We are not at a place where the hardware or software are reliable enough to base a project solely on technical skills. Our belief is that the learning is greater with the "failure" as part of the process.

Mentoring will play a crucial role in building educational opportunities around videoconferencing. Because of the frustrating nature of the technology, having a guide to help "frame" the learning around failure is imperative. A collaborative approach works best for this reason.

And embracing failure a must.